

tubing string 528 may be stabbed through the internal well packer or internal plugging device to allow injection of treatment fluid into the isolated open-hole interval 514. Fluid pressure opens unstimulated fractures 518 within the isolated open-hole interval 514 without propagating stimulated fractures 516. Treatment fluid may be injected down the annulus 524 between the tubing string 528 and the wellbore wall 506 to stimulate fractures within selected open-hole intervals above the scab liner 522. Treatment fluid may also be injected simultaneously and/or independently down the tubing string 528 and the annulus 524 to stimulate fractures in a plurality of open-hole intervals above and below the scab liner 522. After stimulation of fractures 518 within the isolated open-hole interval 514, the tubing string 528 is raised from within the scab liner 522 and a temporary plug is installed below the polished bore receptacle 526 to seal off the isolated open-hole interval 514. The temporary plug may be a "NO-GO" or other plug known in the art for internally plugging scab liners.

A plurality of scab liners may be deployed in the subterranean well 502 and positioned proximate a plurality of selected open-hole intervals to hydraulically isolate the selected open-hole intervals for fracture stimulation. A polished bore receptacle, packer or other internal plugging device is installed inside the scab liner adjacent to a selected open-hole interval to provide hydraulic isolation within the tubing string 528 is stabbed through the polished bore receptacle and treatment fluid is injected down the tubing string 528 or the annulus 524 to stimulate fractures within open-hole intervals above and/or below the scab liner 522 without propagating stimulated fractures. After stimulation of fractures within a plurality of open-hole intervals, a temporary plug may be installed below the polished bore receptacle to seal off the isolated open-hole interval. Temporary plugs such as "NO-GO" plugs installed below one or more polished bore receptacles in one or more scab liners may be retrieved with a wire line, a coiled tubing rig or conventional drill pipe and a drill rig to maximize energy recovery from a plurality of open-hole intervals after fracture stimulation is complete.

In accordance with the present disclosure, the methods herein disclosed for isolating an open-hole interval including the injection of a temporary fracture sealant, the injection of a high viscosity fluid, the use of high pressure jet nozzles, the deployment of an open-hole packer and the deployment of a scab liner may be used alone or in combination to isolate one or more selected open-hole intervals for fracture stimulation.

During fracture stimulation, a micro-seismic monitoring system may be installed to detect the location of micro-fractures real-time as they are stimulated during fracture stimulation. A fiber optic temperature and/or pressure monitoring system may also be installed to provide temperature and pressure data for determining downhole parameters real-time during stimulation. These detection systems are used to determine downhole parameters including, but not limited to, the propagation of fractures, the pressure within the subterranean well, the temperature within the subterranean well, the flow rate and flow pattern of treatment fluid in the subterranean well and the flow rate and flow pattern of treatment fluid within fractures in the subterranean formation.

Example embodiments have been described hereinabove regarding improved systems and methods for maximizing energy recovery from a subterranean formation. Various modifications to and departures from the disclosed example embodiments will occur to those having ordinary skill in the art. The subject matter that is intended to be within the spirit of this disclosure is set forth in the following claims.

What is claimed is:

1. A method for recovering thermal energy from a subterranean formation comprising:
  - pressurizing at least one unstimulated fracture within an unisolated subterranean open-hole interval to create a first stimulated fracture;
  - isolating a selected subterranean open-hole interval by blocking the first stimulated fracture with a temporary fracture sealant, wherein the temporary fracture sealant thermally degrades at geostatic temperatures; and
  - pressurizing at least one unstimulated fracture within the isolated subterranean open-hole interval to create a second stimulated fracture, wherein a water is circulated within the second stimulated fracture to be heated and produced from the well for generating electricity.
2. The method as recited in claim 1, wherein isolating the selected subterranean open-hole interval comprises positioning an isolation tool adjacent to the selected subterranean open-hole interval.
3. The method as recited in claim 2, wherein pressurizing the at least one unstimulated fracture within the isolated subterranean open-hole interval comprises injecting a treatment fluid down a tubing string.
4. The method as recited in claim 3, further comprising pressurizing the at least one unstimulated fracture in the unisolated subterranean open-hole interval by injecting the treatment fluid down an annulus between the tubing string and the unisolated subterranean open-hole interval.
5. The method as recited in claim 4, wherein the isolation tool is a high temperature inflatable open-hole packer.
6. The method as recited in claim 4, wherein the isolation tool is a high temperature expandable open-hole packer comprising an expandable element and a sealing element.
7. The method as recited in claim 1, wherein isolating the selected subterranean open-hole interval comprises positioning a scab liner proximate the selected subterranean open-hole interval.
8. The method as recited in claim 7, wherein pressurizing the at least one unstimulated fracture within the isolated subterranean open-hole interval comprises injecting a treatment fluid down a tubing string.
9. The method as recited in claim 8, further comprising pressurizing the at least one unstimulated fracture in the unisolated subterranean open-hole interval by injecting the treatment fluid down an annulus between the tubing string and the unisolated subterranean open-hole interval.
10. The method as recited in claim 1, wherein pressurizing the at least one unstimulated fracture in the isolated subterranean open-hole interval comprises projecting treatment fluid from a high pressure jet nozzle against the isolated subterranean open-hole interval.
11. The method as recited in claim 10, wherein the treatment fluid comprises a granular material.
12. The method as recited in claim 1, wherein isolating the selected subterranean open-hole interval comprises at least partially filling at least one fracture in the unisolated subterranean open-hole interval with a high viscosity fluid.
13. The method as recited in claim 1, further comprising detecting a stimulation of fractures real-time with a micro-seismic monitoring system.
14. The method as recited in claim 1, further comprising detecting a downhole parameter real-time.
15. The method as recited in claim 14, wherein the downhole parameter is at least one of pressure of the selected open-hole interval, temperature of the selected open-hole interval, the flow rate of the treatment fluid in the selected open-hole interval, the flow pattern of treatment fluid in the